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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,452	11/28/2003	Masahiko Kubo	117861	8268

25944 7590 01/25/2008
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EXAMINER	
WILLS, LAWRENCE E	

ART UNIT	PAPER NUMBER
2625	

MAIL DATE	DELIVERY MODE
01/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/722,452	KUBO, MASAHIKO	
	Examiner	Art Unit	
	Lawrence E. Wills	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *9/12/07, 1/6/2004*.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3, 4, 5, 6, 7, 11, 12, 13, 14, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 3, it is not clear if the "three variables", page 57, line 5, relates to the "N variables of the second color signal" page 57, line 2 or if it relates to "a first color signal including three variables", page 56, line 4, claim 1.

Regarding claim 4, it is unclear which variables the "four variables" on page 57, line 13 are being directed.

Regarding claim 11, it is not clear if the "three variables", page 60, line 8, relates to the "N variables of the second color signal" page 60, line 5 or if it relates to "a first color signal including three variables", page 59, line 7, claim 9.

Regarding claim 12, it is unclear which variables the "four variables" on page 60, line 16 are being directed.

Regarding claim 5, it is not clear what "inputtable in a color gamut" on page 58, line 1, means. The definition of inputtable was not found in the specification.

Regarding claim 13, it is not clear what "inputtable in a color gamut" on page 61, line 5, means. The definition of inputtable was not found in the specification.

Regarding claim 6, it is unclear if "a UCR ration concerning a chromatic ration", page 58, lines 18-19 is a misspelling or if this relates to a part of the UCR and chromatic data.

Regarding claim 14, it is unclear if "a UCR ration concerning a chromatic ration", page 61, lines 21-23 is a misspelling or if this relates to a part of the UCR and chromatic data.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 8-12 16, 17, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kita et al. (US Patent No. 5,331,440)

Regarding claim 1, Kita '440 teaches a color image processing method for converting a first color signal (i.e. L*a*b* coming out of Lightness/Chromaticity Separation Means, number 2, Fig. 1) including three variables (i.e. L*a*b*, Fig. 1) into a second color signal (Yout, Mout, Cout, and Kout coming from Gradation Correction Means, number 6-2, Fig. 1) including N variables, where N is an integer, which is not smaller than four, (4 color printing, column 1, line 24) the color image processing method comprising: a first conversion of determining (N-3) variables of the second color signal from the first color signal (the combination of Full Black Conversion Means, numbers 3-1,3-2, Picture/Character Separation Means, number 7, black quantity adjusting means, numbers 4-1, 4-2,convert the L*a*b* values into a usable K value); and a second conversion of determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is calorimetrically equal to the first color signal (the combination of Color Conversion Table, number 5-1, Interpolation Means, number 5-2, convert the determined K value and L*a*b* values into CMY values).

Regarding claim 2, Kita '440 teaches wherein: the second conversion includes solving a function of the second color signal, which indicates a relation between the second color signal and a device-independent color signal on color system coordinates corresponding to the second color signal with using the first color signal and the determined (N-3) variables of the second color signal as an input (the combination of Color Conversion Table, number 5-1, Interpolation Means,

number 5-2, are viewed as the second conversion unit which will convert the determined K value and L*a*b* values into CMY values).

Regarding claim 3, Kita '440 teaches the N variables of the second color signal includes: four variables indicating yellow, magenta, cyan, and black (as seen in Fig. 1, the four outputs of number 6-2; Yout, Mout, Cout, Kout); and at least one of three variables indicating red, green, and blue (the three variables are being interpreted as the three variable of the first input signal and as seen in Fig. 1, the L*a*b* values correspond to the RGB input values).

Regarding claim 4, Kita '440 teaches wherein: the (N-3) variables of the second color signal determined in the first conversion include: a variable indicating black (the combination of Full Black Conversion Means, numbers 3-1,3-2, Picture/Character Separation Means, number 7, black quantity adjusting means, numbers 4-1, 4-2,convert the L*a*b* values into a usable K value); and at least two of four variables indicating red, green, and blue (as seen in Fig. 1, the L*a*b* values correspond to the RGB input values and are determined by the first conversion unit); and the three variables determined in the second conversion include three variables indicating yellow, magenta, and cyan (as seen in Fig. 1, the three outputs of Yout, Mout, Cout).

Regarding claim 8, Kita '440 teaches wherein the first color signal is an L*a*b* color signal (i.e. L*a*b*, Fig. 1).

Regarding claim 9, Kita '440 teaches a color image processing apparatus for converting a first color signal (i.e. L*a*b* coming out of Lightness/Chromaticity Separation Means, number 2, Fig. 1) including three variables (i.e. L*a*b*, Fig. 1) into a second color signal (Yout, Mout, Cout, and Kout coming from Gradation Correction Means, number 6-2, Fig. 1) including N variables, where N is an integer, which is not smaller than four, (4 color printing, column 1, line 24) the color image processing apparatus comprising: a first conversion unit for determining (N-3) variables of the second color signal from the first color signal (the combination of Full Black Conversion Means, numbers 3-1,3-2, Picture/Character Separation Means, number 7, black quantity adjusting means, numbers 4-1, 4-2,convert the L*a*b* values into a usable K value); and a second conversion unit for determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is calorimetrically equal to the first color signal (the combination of Color Conversion Table, number 5-1, Interpolation Means, number 5-2, convert the determined K value and L*a*b* values into CMY values).

Regarding claim 10, Kita '440 teaches wherein: the second conversion unit solves a function of the second color signal, which indicates a relation between the second color signal and a device-independent color signal on color system coordinates corresponding to the second color signal, using the first color signal and the determined (N-3) variables of the second color signal as an input. (the combination of Color Conversion Table, number 5-1, Interpolation Means, number 5-2, are viewed as the second conversion unit which will convert the determined K value and L*a*b* values into CMY values).

Regarding claim 11, Kita '440 teaches the N variables of the second color signal includes: four variables indicating yellow, magenta, cyan, and black (as seen in Fig. 1, the four outputs of number 6-2; Yout, Mout, Cout, Kout); and at least one of three variables indicating red, green, and blue (the three variables are being interpreted as the three variable of the first input signal and as seen in Fig. 1, the L*a*b* values correspond to the RGB input values).

Regarding claim 12, Kita '440 teaches wherein: the (N-3) variables of the second color signal determined in the first conversion include: a variable indicating black (the combination of Full Black Conversion Means, numbers 3-1,3-2, Picture/Character Separation Means, number 7, black quantity adjusting means, numbers 4-1, 4-2,convert the L*a*b* values into a usable K value); and at least two of four variables indicating red, green, and blue (as seen in Fig. 1, the L*a*b* values correspond to the RGB input values and are determined by the first conversion unit); and the three variables determined in the second conversion include three variables indicating yellow, magenta, and cyan (as seen in Fig. 1, the three outputs of Yout, Mout, Cout).

Regarding claim 16, Kita '440 teaches wherein the first color signal is an L*a*b* color signal, (i.e. L*a*b*, Fig. 1).

Regarding claim 17, Kita '440 teaches a method for producing a direct look-up table (color conversion table, number 5-1, Fig. 1) used in converting a first color signal (i.e. L*a*b* coming

out of Lightness/Chromaticity Separation Means, number 2, Fig. 1) including three variables (i.e. L*a*b*, Fig. 1) into a second color signal (Yout, Mout, Cout, and Kout coming from Gradation Correction Means, number 6-2, Fig. 1) including N variables, where N is an integer, which is not smaller than four, (4 color printing, column 1, line 24) the color image processing method comprising: a first conversion of determining (N-3) variables of the second color signal from the first color signal (the combination of Full Black Conversion Means, numbers 3-1,3-2, Picture/Character Separation Means, number 7, black quantity adjusting means, numbers 4-1, 4-2,convert the L*a*b* values into a usable K value); and a second conversion of determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is calorimetrically equal to the first color signal (the combination of Color Conversion Table, number 5-1, Interpolation Means, number 5-2, convert the determined K value and L*a*b* values into CMY values).

Regarding claim 18, Kita '440 teaches a color image processing program causing a computer to perform a process for converting a first color signal (i.e. L*a*b* coming out of Lightness/Chromaticity Separation Means, number 2, Fig. 1) including three variables (i.e. L*a*b*, Fig. 1) into a second color signal (Yout, Mout, Cout, and Kout coming from Gradation Correction Means, number 6-2, Fig. 1) including N variables, where N is an integer, which is not smaller than four, (4 color printing, column 1, line 24) the color image processing method comprising: a first conversion of determining (N-3) variables of the second color signal from the first color signal (the combination of Full Black Conversion Means, numbers 3-1,3-2,

Picture/Character Separation Means, number 7, black quantity adjusting means, numbers 4-1, 4-2,convert the L*a*b* values into a usable K value); and a second conversion of determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is calorimetrically equal to the first color signal (the combination of Color Conversion Table, number 5-1, Interpolation Means, number 5-2, convert the determined K value and L*a*b* values into CMY values).

Regarding claim 19, Kita '440 teaches a computer-readable recording medium storing a color image processing program causing a computer to perform a process for converting a first color signal (i.e. L*a*b* coming out of Lightness/Chromaticity Separation Means, number 2, Fig. 1) including three variables (i.e. L*a*b*, Fig. 1) into a second color signal (Yout, Mout, Cout, and Kout coming from Gradation Correction Means, number 6-2, Fig. 1) including N variables, where N is an integer, which is not smaller than four, (4 color printing, column 1, line 24) the color image processing method comprising: a first conversion of determining (N-3) variables of the second color signal from the first color signal (the combination of Full Black Conversion Means, numbers 3-1,3-2, Picture/Character Separation Means, number 7, black quantity adjusting means, numbers 4-1, 4-2,convert the L*a*b* values into a usable K value); and a second conversion of determining the remaining three variables of the second color signal on the basis of the determined (N-3) variables of the second color signal and the first color signal so that the second color signal is calorimetrically equal to the first color signal (the combination of

Color Conversion Table, number 5-1, Interpolation Means, number 5-2, convert the determined K value and L*a*b* values into CMY values).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita et. al. (US Patent 5,331,440) in view of Po-Chieh (US Patent 5,508,827)

Regarding claim 5, Kita'440 fails to teach wherein: the first conversion includes: determining a UCR ratio concerning the (N-3) variables of the second color signal on the basis of the first color signal; determining maximum and minimum values of each of (N-3) variables of the second color signal, which is inputtable in a color gamut, on the basis of the first color signal; and determining the (N-3) variables of the second color signal to be between the maximum and minimum values on the basis of the UCR ratio concerning the (N-3) variables of the second color signal and the maximum and minimum values.

However, Po-Chieh'827 teaches determining a UCR ratio (α, column 5, line 60) concerning the (N-3) variables of the second color signal (K or black value, column 5, line 53) on the basis of the first color signal (L* , column 5, line 61); determining maximum (Kmax, column 5, line 58) and minimum values (Kmin, column 5, line 58) of each of (N-3) variables of

the second color signal (K or black value), which is inputtable in a color gamut (Kmin is Y=max, M=max, C=max, K=0, column 5, line 37-40, column 5, lines 35-40 and Kmax is Y=0, M=0, C=0, K=max, column 5, lines 28-33. The YMCK values were quantized using color patches therefore, they must be in the color gamut of the output device, column 4, lines 65-67), on the basis of the first color signal (the YMCK values are converted into a model of CIELAB in column 5, lines 20-24); and determining the (N-3) variables of the second color signal to be between the maximum and minimum values on the basis of the UCR ratio concerning the (N-3) variables of the second color signal and the maximum and minimum values (Knew=(1-α)Kmin+αKmax, column 5, line 58).

Having a system of Kita'440 reference and then given the well-established teaching of Po-Chieh'827 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kita'440 reference as taught by Po-Chieh'827 reference, since Po-Chieh'827 reference suggested increasing processing speed, column 4, line 34.

Regarding claim 13, Kita'440 fails to teach wherein: the first conversion unit: determines a UCR ratio concerning the (N-3) variables of the second color signal on the basis of the first color signal; determines maximum and minimum values of each of (N-3) variables of the second color signal, which is inputtable in a color gamut, on the basis of the first color signal; and determines the (N-3) variables of the second color signal to be between the maximum and minimum values on the basis of the UCR ratio concerning the (N-3) variables of the second color signal and the maximum and minimum values.

However, Po-Chieh'827 teaches determines a UCR ratio (α, column 5, line 60) concerning the (N-3) variables of the second color signal (K or black value, column 5, line 53) on the basis of the first color signal (L* , column 5, line 61); determines maximum (Kmax, column 5, line 58) and minimum values (Kmin, column 5, line 58) of each of (N-3) variables of the second color signal (K or black value), which is inputtable in a color gamut (Kmin is Y=max, M=max, C=max, K=0, column 5, line 37-40, column 5, lines 35-40 and Kmax is Y=0, M=0, C=0, K=max, column 5, lines 28-33. The YMCK values were quantized using color patches therefore, they must be in the color gamut of the output device, column 4, lines 65-67), on the basis of the first color signal (the YMCK values are converted into a model of CIELAB in column 5, lines 20-24); and determines the (N-3) variables of the second color signal to be between the maximum and minimum values on the basis of the UCR ratio concerning the (N-3) variables of the second color signal and the maximum and minimum values (Knew=(1-α)Kmin+αKmax, column 5, line 58).

Having a system of Kita'440 reference and then given the well-established teaching of Po-Chieh'827 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kita'440 reference as taught by Po-Chieh'827 reference, since Po-Chieh'827 reference suggested increasing processing speed, column 4, line 34.

5. Claims 6, 7, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita et al. (5,331,440) in view of Poe et al. (US Patent 5,857,063)

Regarding claim 6, Kita'440 fails to teach the first conversion includes: determining a UCR ratio concerning an achromatic component, a UCR ratio concerning a chromatic component, and three primary color signals, which represent the first color signal, on the basis of the first color signal; and performing a UCR processing on the basis of the achromatic component and a UCR ration concerning a chromatic ration to eliminate the achromatic component and the chromatic component from the three primary color signals, to thereby determine the (N-3) variables of the second color signal.

However, Poe'063 teaches determining a UCR ratio concerning an achromatic component (pseudo-colorant signals are equal to one another, column 8, lines 12-15, in addition see Fig. 1, grey component), a UCR ratio concerning a chromatic component (at least one of the pseudo-colorant signals is zero, column 8, lines 15-16, in addition see Fig. 1, chromatic component), and three primary color signals (cmy, column 8, line 12), which represent the first color signal (cmy to CMYK to L*a*b*, which relates to the first color signal, column 7, line 40), on the basis of the first color signal; and performing a UCR processing on the basis of the achromatic component and a UCR ration concerning a chromatic ration to eliminate the achromatic component and the chromatic component from the three primary color signals, to thereby determine the (N-3) variables of the second color signal (cmy vector can be resolved into the vector sum of a achromatic and a chromatic component, column 8, lines 12-16).

Having a system of Kita'440 reference and then given the well-established teaching of Poe'063 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kita'440 reference as taught by Poe'063

reference, since Poe'063 reference suggested automatically preserving color fidelity to a high degree of accuracy, column 3, lines 33-34.

Regarding claim 7, Kita'440 fails to teach wherein the three primary color signals indicate yellow, magenta, and cyan.

However, Poe'063 teaches wherein the three primary color signals indicate yellow, magenta, and cyan, (cmy vector can be resolved into the vector sum of a achromatic and a chromatic component, column 8, lines 12-16).

Having a system of Kita'440 reference and then given the well-established teaching of Poe'063 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kita'440 reference as taught by Poe'063 reference, since Poe'063 reference suggested automatically preserving color fidelity to a high degree of accuracy, column 3, lines 33-34.

Regarding claim 14, Kita'440 fails to teach the first conversion includes: determining a UCR ratio concerning an achromatic component, a UCR ratio concerning a chromatic component, and three primary color signals, which represent the first color signal, on the basis of the first color signal; and performing a UCR processing on the basis of the achromatic component and a UCR ration concerning a chromatic ration to eliminate the achromatic component and the chromatic component from the three primary color signals, to thereby determine the (N-3) variables of the second color signal.

However, Poe'063 teaches determines a UCR ratio concerning an achromatic component (pseudo-colorant signals are equal to one another, column 8, lines 12-15, in addition see Fig. 1, grey component), a UCR ratio concerning a chromatic component (at least one of the pseudo-colorant signals is zero, column 8, lines 15-16, in addition see Fig. 1, chromatic component), and three primary color signals (cmy, column 8, line 12), which represent the first color signal (cmy to CMYK to L*a*b*, which relates to the first color signal, column 7, line 40), on the basis of the first color signal; and performs a UCR processing on the basis of the achromatic component and a UCR ration concerning a chromatic ration to eliminate the achromatic component and the chromatic component from the three primary color signals, to thereby determine the (N-3) variables of the second color signal (cmy vector can be resolved into the vector sum of a achromatic and a chromatic component, column 8, lines 12-16).

Having a system of Kita'440 reference and then given the well-established teaching of Poe'063 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kita'440 reference as taught by Poe'063 reference, since Poe'063 reference suggested automatically preserving color fidelity to a high degree of accuracy, column 3, lines 33-34.

Regarding claim 15, Kita'440 fails to teach wherein the three primary color signals indicate yellow, magenta, and cyan.

However, Poe'063 teaches wherein the three primary color signals indicate yellow, magenta, and cyan, (cmy vector can be resolved into the vector sum of a achromatic and a chromatic component, column 8, lines 12-16).

Having a system of Kita'440 reference and then given the well-established teaching of Poe'063 reference, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kita'440 reference as taught by Poe'063 reference, since Poe'063 reference suggested automatically preserving color fidelity to a high degree of accuracy, column 3, lines 33-34.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence E. Wills whose telephone number is 571-270-3145. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on 571-272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LEW
January 10, 2008

AUNG S. MOE
SUPERVISORY PATENT EXAMINER
1/22/08